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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/941,988 | 08/30/2001 | Hirayoshi Tanei | 566.40595X00 | 7616 |

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[REDACTED] EXAMINER

BLACKWELL RUDASIL, GWENDOLYN A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 1775 | 9 |

DATE MAILED: 11/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

7-9

| | | |
|-----------------------------|---------------------------------|--------------|
| Offic Action Summary | Application No. | Applicant(s) |
| | 09/941,988 | TANEI ET AL. |
| | Examiner | Art Unit |
| | Gwendolyn A. Blackwell-Rudasill | 1775 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 24 October 2002.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-4 is/are pending in the application.
 - 4a) Of the above claim(s) 3 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,2 and 4 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in Paper No. 8 is acknowledged. The traversal is on the ground(s) that amended claim 1 now incorporates the limitation that the conductive film does not contain any glass, which makes it commensurate in scope with the method claims, and therefore the restriction requirement should be withdrawn. This is not found persuasive because although the applicant incorporated the limitation that the conductor film should be made without glass, the article can be made by a materially different process. Instead of sticking a conductor film onto a ceramic substrate, the electronic component can be formed by forming a conductive film on a releasable sheet, layering the glass ceramic material on top of the conductive film, sintering, then removing the releasable sheet from the conductive film so that the glass ceramic is now the bottom layer.
2. New claim 4 is being considered as a product by process claim, which will be grouped with the article claims of Group I. Because the patentability of a product does not depend on its method of production, if the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *MPEP 2113.*

The requirement is still deemed proper and is therefore made FINAL.

3. Rejoinder of non-elected process claim will be considered upon the indication of allowable subject matter pursuant to *MPEP 821.04.*

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Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent no. 6,338,893, Kodera et al., in view of United States Patent no. 5,527,627, Lautzenhiser et al.

Kodera et al disclose a glass ceramic printed circuit substrate with a conductive paste printed thereon. The conductive paste is composed of "100 parts by weight of silver-platinum;

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0.2 to 1 part of manganese dioxide; 0.2 to 1 part copper oxide; 0.3 to 1 part by weight of silicon dioxide; and 3 to 5.6 parts by weight of molybdenum and tungsten powder," (column 3, lines 56-62). A ceramic printed circuit substrate is made by forming a printed circuit made of the aforementioned conductive paste on green sheets that are composed of a glass ceramic containing a borosilicate glass, (column 4, lines 46-65). Kodera et al also disclose that a conductive film containing a glass frit causes an excessive amount of glass to appear on the surface of a circuit conductor during firing which causes a reduction in bonding strength, (column 3, lines 3-28). Kodera et al do not specifically disclose the surface area of the silver particles.

Lautzenhiser et al disclose an ink composition that is used on ceramic substrate, (column 7, lines 4-6). The ink is composed a powder mixture and an organic binder mixture that has been dissolved in a solvent, (column 3, lines 6-13). The powder mixture is made of about 84-94 wt% of silver powder. At least one of the silver powders is a coarse powder with a surface area of not greater than $0.35\text{ m}^2/\text{g}$ and the second powder is a finer powder having a surface area of greater than $0.6\text{ m}^2/\text{g}$, (columns 4-5, lines 60-30). The ink composition has increased conductivity as well as improved physical, solderability, and adhesion characteristics of the resulting film, (column 2, lines 34-66).

While Kodera et al do not disclose the specific surface area of the silver particles as claimed by applicant, it is within the skill of one in the art at the time of invention to modify the printed circuit substrate of Kodera et al with the ink composition of Lautzenhiser et al as the ink composition does not contain a glass frit. In addition, because the conductive film can be manufactured utilizing a single print, dry, and fire cycle, the solderability and adhesive properties

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of the resulting film are improved, (Lautzenhiser, column 2, lines 34-44). As such, the manufacturing cost of the modified invention would be lowered.

Although, Kodera et al and Lautzenhiser et al do not specifically disclose that the temperature difference between the conductor paste and the softening temperature of the glass in the substrate have a difference of $\pm 50^{\circ}\text{C}$, it is demonstrated that the green sheets and the printed circuits can be printed at the same time, which satisfies that limitation, (Kodera, abstract; Lautzenhiser, abstract).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

United States Patent no. 3,872,360, Sheard, discloses an electrode composition used on ceramic substrates that can contain silver with no glass frit.

United States Patent no. 4,336,551, Fujita et al., disclose an Ag-Pd conductor paste that does not contain a glass frit.

United States Patent no. 6,404,318, Uchikoba et al., disclose a conductive paste that utilizes silver with a surface area of $0.5 \text{ m}^2/\text{g}$ wherein the paste does not contain glass frit.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn A. Blackwell-Rudasill whose telephone number is (703) 305-9741. The examiner can normally be reached on Monday - Thursday; 6:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Gwendolyn A. Blackwell-Rudasill
Examiner
Art Unit 1775

gbr
November 6, 2002